

1 WHAT IS CLAIMED IS:

- 2 1. A method of data object transformation, the method including:
3 receiving a message from a communications line, the message including
4 one or more data objects of a first object type, wherein the message is in a first
5 communications format;
6 converting the message from the first communications format to a
7 second communications format;
8 converting the one or more data objects from the first object type to a
9 second object type, wherein the one or more data objects are converted using
10 a first set of one or more transformation classes, each of the one or more
11 transformation classes generated using mapping rules; and
12 transmitting the converted one or more second object type data objects
13 to an application.
- 14 2. A method according to claim 1, wherein the communications line is
15 messaging middleware, and the first communications format is a middleware-
16 dependent format, and the second communications format is a middleware-
17 independent format.
- 18 3. A method according to claim 1, wherein each of the one or more data
19 objects is a Java object.
- 20 4. A method according to claim 1, wherein the first object type is a domain
21 object model type and the second object type is an application-specific object
22 model type.
- 23 5. A method according to claim 1, further including:
24 registering the application with the communications line; and
25 transmitting high-level function calls to the application.
- 26 6. A method according to claim 1, the method further including:
27 receiving a second message from the application, the second message
28 including one or more data objects of the second object type;
29 converting the one or more data objects from the second object type to
30 the first object type, wherein the one or more data objects are converted using
31 a second set of one or more of the transformation classes;

- 1 generating a communications line dependent message, the
- 2 communications line dependent message including the converted one or more
- 3 first object type data objects; and
- 4 transmitting the communications line dependent message to the
- 5 communications line.
- 6 7. A method according to claim 6, wherein the communications line is
- 7 messaging middleware, and the first communications format is a middleware-
- 8 dependent format, and the second communications format is a middleware-
- 9 independent format.
- 10 8. A method according to claim 6, wherein each of the one or more data
- 11 objects is a Java object.
- 12 9. A method according to claim 6, wherein the first object type is a domain
- 13 object model type and the second object type is an application-specific object
- 14 model type.
- 15 10. A method according to claim 6, further including:
- 16 registering the application with the communications line; and
- 17 transmitting high-level function calls to the application.
- 18 11. A method of data object transformation, the method including:
- 19 generating a first object model and a second object model, the first
- 20 object model including a plurality of data objects of a first object type, and the
- 21 second object model including a plurality of data objects of a second object
- 22 type;
- 23 storing the first and second object models in one or more memories;
- 24 generating transformation mapping rules;
- 25 generating a plurality of transformation classes using the first and
- 26 second object models and the transformation mapping rules;
- 27 receiving one or more data objects;
- 28 converting the received one or more data objects, using the
- 29 transformation classes, from (1) the first object type to the second object type;
- 30 or (2) from the second object type to the first object type; and
- 31 transmitting the converted one or more data objects.

- 1 12. A method according to claim 11, wherein each of the one or more data
2 objects is a Java object.
- 3 13. A method according to claim 11, wherein the first object model is a
4 domain object model and the second object model is an application-specific
5 object model.
- 6 14. A method according to claim 11, wherein the first object type is a domain
7 object model type and the second object type is an application-specific object
8 model type.
- 9 15. A method according to claim 11, wherein the one or more data objects
10 are receive from messaging middleware.
- 11 16. A method according to claim 11, wherein the one or more data objects
12 are receive from an application, the application coupled to a communications
13 line.
- 14 17. A system for data object transformation, the system including:
15 one or more processors;
16 one or more memories coupled to the one or more processors; and
17 program instructions stored in the one or more memories, the one or
18 more processors being operable to execute the program instructions, the
19 program instructions including:
20 receiving a message from a communications line, the message
21 including one or more data objects of a first object type, wherein the
22 message is in a first communications format;
23 converting the message from the first communications format to a
24 second communications format;
25 converting the one or more data objects from the first object type
26 to a second object type, wherein the one or more data objects are
27 converted using a first set of one or more transformation classes, each
28 of the one or more transformation classes generated using mapping
29 rules; and
30 transmitting the converted one or more second object type data
31 objects to an application.

- 1 18. A system according to claim 17, wherein the communications line is
2 messaging middleware, and the first communications format is a middleware-
3 dependent format, and the second communications format is a middleware-
4 independent format.
- 5 19. A system according to claim 17, wherein each of the one or more data
6 objects is a Java object.
- 7 20. A system according to claim 17, wherein the first object type is a domain
8 object model type and the second object type is an application-specific object
9 model type.
- 10 21. A system according to claim 17, wherein the program instructions further
11 include:
12 receiving a second message from the application, the second message
13 including one or more data objects of the second data format;
14 converting the one or more data objects from the second object type to
15 the first object type, wherein the one or more data objects are converted using
16 a second set of one or more of the transformation classes;
17 generating a communications line dependent message, the
18 communications line dependent message including the converted one or more
19 first object type data objects; and
20 transmitting the communications line dependent message to the
21 communications line.
- 22 22. A system for data object transformation, the system including:
23 a communications line;
24 a transformation adapter coupled to the communications line, the
25 transformation adapter including:
26 an assembly/disassembly layer configured to convert messages
27 from a first communications format to a second communications format;
28 a transformation layer configured to convert data objects from a
29 first object type to a second object type using one or more
30 transformation classes; and
31 a method invocation layer;

1 a transformation class generator coupled to the transformation adapter,
2 the transformation class generator configured to generate the one or more
3 transformation classes using transformation mapping rules; and
4 an application coupled to the transformation adapter, wherein the
5 application transmits data to and receives data from the method invocation
6 layer.

7 23. A system according to claim 22, wherein the communications line is
8 messaging middleware.

9 24. A system according to claim 22, wherein each of the one or more data
10 objects is a Java object.

11 25. A system according to claim 22, wherein the first object type is a domain
12 object model type and the second object type is an application-specific object
13 model type.

14 26. An apparatus for data object transformation, the apparatus including:
15 means for generating a first object model and a second object model,
16 the first object model including a plurality of data objects of a first object type,
17 and the second object model including a plurality of data objects of a second
18 object type;

19 means for storing the first and second object models;

20 means for generating transformation mapping rules;

21 means for generating a plurality of transformation classes using the first
22 and second object models and the transformation mapping rules;

23 means for receiving a one or more data objects;

24 means for converting the received data objects, using the transformation
25 classes, from the first object type to the second object type; and

26 means for transmitting the converted one or more data objects.

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